ISSN: 0703-8763

Edmonton Area Series Report No. 57

FACTORS ANTECEDENT TO IMPAIRED DRIVING: A RESEARCH NOTE

by

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The 1984 Edmonton Area Study (EAS) was administered and supported by the Population Research Laboratory and the Department of Sociology at the University of Alberta.

January 1988

Abstract

This paper explores factors antecedent to impaired driving in an urban community. Specifically, it attempts to investigate patterns of association between economic, demographic, social, and personal variables, and frequency of impaired driving. Cross-tabular analysis reveals that sex, age, marital status, employment status, occupation, standard of living, driving; and degree of loneliness, boredom, and depression were found to be significantly associated with impaired driving.

Multiple regression analysis was performed to determine which of the demographic, economic, social, and personal variables are most important in predicting impaired driving. The results indicate that three variables (standard of living satisfaction, frequency of getting together with friends, and gender) are significant predictors of impaired driving.

FACTORS ANTECEDENT TO IMPAIRED-DRIVING: A RESEARCH NOTE

Introduction

The appalling total number of deaths and injuries resulting from alcohol-related accidents constitute a public health problem, particularly among adolescents in Canada. In spite of wide publicity and carefully tailored educational campaigns on the devastating effects of impaired driving, many people continue to be apathetic and indifferent to this public menace.

The magnitude of alcohol-related casualties has been recently highlighted by the Alberta Traffic Collision Statistics. For example, in 1986, there were 22,730 drivers in casualty collisions in the province. About 12 percent of all drivers had consumed alcohol before the crash. The severity of the collision increased with the amount of alcohol consumed before the crash. Approximately 27 percent of drivers involved in fatal accidents in the province had been drinking, compared to about 12 percent of drivers in injury crashes (Alberta Transportation, 1986:1)[1].

Past Research

Growing attention is being devoted to impaired driving in Canada (Moskowitz et al., 1979; Mercer, 1983; Foley et al., 1976; Wilson, 1984; Vingilis, 1983; Vingilis et al., 1982). These researchers have, for the most part, invested their empirical efforts in identifying the characteristics of the convicted impaired drivers.

Prior studies have underscored the importance of age as a potential determinant of impaired driving behavior (Lawson et al., 1982). Specifically, younger drivers and middle-aged groups tend to be more involved with impaired driving than any other age groups. Along with age, two other personal variables, gender and marital status, have been found to be associated with driving while impaired (DWI). Studies examining gender differences in impaired driving have consistently found higher incidence of impaired driving among males than females (Moskowitz et al., 1979; Foley, 1976; Vingilis, et al., 1982; Wilson, 1984). Marital status has been found to be significantly associated with

driving while impaired (Moskowitz et al., 1979). Married individuals are less likely to drive under the influence than are single people. Other personal characteristics found to be common among impaired drivers include psychological disturbance, lower education, higher accident rate, lower income, and frequent drinking.

While several studies have examined the characteristics of impaired drivers, very few studies have attempted to predict impaired driving. Earlier research addressing this question has identified a number of variables predicting impaired driving behaviour. A study conducted among convicted impaired drivers found a high incidence of alcoholism to be associated with a tendency to drive while impaired (Vingilis, 1983). Norstrom's (1981) study of licenced drivers in Sweden found further support for the influence of alcohol consumption on impaired driving behaviour. Beck (1981) used multivariate techniques to predict driving while impaired among 107 college students. In Beck's study, the "normative judgement" of impaired driving by friends and family members was found to be the best predictor of impaired driving.

A welcome addition to the limited body of research in predicting impaired driving in Canada is the National Household Survey on drinking and driving conducted by Transport Canada. In this study, Wilson (1984) performed multivariate analyses to predict impaired driving among the general population of drivers in Canada. He found alcohol consumption to be the single most powerful predictor of driving while impaired. His findings also offered support for peer influence in impaired driving behaviour.

This research attempts to predict some of the factors antecedent to impaired driving by using multivariate analysis. Despite the consistent reports that a trend toward alcoholism is a common characteristic of impaired drivers, the predictor of impaired driving based on economic factors, social isolation, and personal distress associated with alcoholism has not been thoroughly explored. For example, a variety of studies have reported the connection between economic distress and drinking problems. Pivotal among them is the finding by Pearlin and Radabaugh (1976) that problematic drinking is rooted in a strained economic situation. Seeman and Anderson (1983) reported that isolation is also associated with drinking problems. In addition, it has been consistently argued that

the problem of alcohol abuse results from personal distress. In a more recent study, Anonovsky et al. (1987) found that daily drinkers tend to be socially isolated and personally depressed. Drawing upon the literature review, the purposes of this research are (1) to explore the frequency of impaired driving in an urban area; (2) to examine the relationship between impaired driving and these domains of 'life distress' that have been found to contribute to drinking behaviour; and (3) to determine which of the 'social distress' variables, as well as the demographic variables, are significant predictors of impaired driving. Part of the importance of this research lies in its attempt to demonstrate that impaired driving can take place in social isolation away from peers. More importantly, the research illustrates how impaired driving behaviour may be bound up in experiences that are rooted in urban problems - economic strain, alienation, and personal distress.

Data and Method

The data analyzed are drawn from the 1984 Edmonton Area Study conducted by the Population Research Laboratory, Department of Sociology at the University of Alberta. A random sample was drawn from a computerized list of all city addresses enumerated in the 1983 Edmonton Civic Census. From the computer tape, a simple random sample of 560 addresses for personal interviewing was selected (Kinzel, 1984).

Several criteria were used in choosing within sampled households. First, anyone 18 years or older was eligible for the one-hour face-to-face interview in which a structured questionnaire was used. In family households, either the wife or husband was eligible for interviewing. Another restriction concerned respondents' sex. Because of a concern that women would be more likely to be home, the sex of the person to be interviewed in each household was predesignated so that the final sample would have as equal a number of males and females as possible.[2]

The completed interviews were selectively and randomly verified through a number of checks which included re-contacting respondents by telephone and home visits. The final sample was 452, giving an 81 percent response rate. The present analysis is based on a sub-sample of 324 respondents who drink and drive.

Measures of Variables

Dependent Variable

The central dependent variable, frequency of impaired driving, is measured through a question asking: "In an average month over the last year, how often have you felt that you had consumed enough alcohol to be legally impaired when you were driving a motor vehicle (that is, had a blood alcohol concentration over the legal limit of 0.08%)?"[3] The distribution of responses to the question indicates that 212 respondents answered "none," while 112 respondents indicated that they had driven under the influence of alcohol. The number of times indicated a range from 1 to 28 times. For the purpose of this study, those drinkers (n=212) who answered "none" to the question were classified as non-impaired drivers (NID). Those drinkers (n=112) who indicated that they had driven while impaired were classified as "drunk-drivers" (DD).

Independent Variables

The independent variables utilized in this study were (1) demographic, (2) economic, (3) social, and (4) personal variables. The author was further interested in how demographic and socio-economic characteristics of respondents affect frequency of impaired driving behaviour. Three demographic characteristics of the sub-sample selected for analysis were age, gender, and marital status. A second independent variable measured the economic distress of respondents by responses to questions on present standard of living, employment status, and occupation.

A third independent variable involved the degree of social isolation and alienation experienced by respondents. Included in social isolation questions were degree of respondent's contact with neighbours and friends, and whether anyone in the community knew the respondent very well. The last variable measured the degree of personal distress through boredom, loneliness, and depression.

Findings

Description of the Sample

The sub-sample consisted of 324 residents of a metropolitan area. Within this sample, the sex ratio was nearly equally distributed with 52 percent males and 48 percent females. The age characteristics of the respondents showed that 19 percent were aged 18-24 years and 37 percent were between 35 years and older. The distribution of marital status of the sample was as follows: 26 percent were married, 56 percent were single, and 18 percent were either separated, divorced or widowed. With respect to income distribution, 28 percent earned less than $10,000, 35 percent were in the $22-33,000 category, and 16 percent were in the $32,000 and above category. The overwhelming majority of the respondents (68 percent) were employed.

Cross-tabular Analysis

Table 1 displays the crosstabular association between frequency of impaired driving and three demographic variables: sex, age, and marital status. Sex of respondent is significantly associated with frequency of impaired driving ($x = 14$, $df = 1$, $p < .01$). More males (44%) drove an automobile after being impaired than females (23%). This finding is consistent with the previous studies reported earlier.

The association between age of respondent and frequency of impaired driving was also significant ($x = 31$, $df = 2$, $p < .01$). The majority of respondents involved in impaired driving (56%) were between the ages of 18-24. The older the respondent, the less likely he or she was to have driven while impaired. While 41 percent of respondents in the 25-35 age group engaged in impaired driving, only 19 percent of those in the 35 years and older reported such incidence.

The third demographic variable, marital status, also showed significant association with frequency of impaired driving ($x = 25$, $df = 2$, $p < .01$). Significantly more single respondents reported driving while impaired (57%) than married respondents (27%). This finding is consistent with that of Wilson (1984) among Canadian drivers.

Table 1: Impaired Driving by Demographic Variables

Impaired Driving Frequency	Sex	
	Male (N=181)	Female (N=145)
N-I-D	56 (101)	77 (111)
I-D	44 (80)	23 (34)

x^2=14, df=1, p<.01

	Age		
	18-24 (N=66)	25-34 (N=128)	35+ (N=132)
N-I-D	44 (29)	59 (75)	82 (108)
I-D	56 (37)	41 (53)	18 (24)

x^2=31, df=2, p<.01

	Marital Status		
	Single (N=88)	Married (N=185)	Other (N=53)
N-I-D	43 (38)	73 (135)	74 (39)
I-D	57 (50)	27 (50)	26 (53)

x^2=25, df=2, p<.01

The items assessing the economic condition of the respondent involved three variables: (1) employment status, (2) occupation, and (3) standard of living satisfaction[4]. The hypothesis was that a high percentage of impaired drivers would be living under poor economic conditions since a number of studies have indicated that economic distress results in drinking problems.

Cross-tabulation analysis revealed the existence of a significant association between occupation and frequency of impaired driving. Table 2 reveals that fewer respondents in the white collar category (25%) engaged in impaired driving than those in the blue collar category (34%). The percentage of people engaged in impaired driving intensified as occupational status declined. Also, both employment status ($p<.01$) and standard of living satisfaction ($p<.05$) showed significant effects on frequency of impaired driving. However, the pattern of relationship between standard of living satisfaction and frequency of impaired driving was not consistent. Those employed full-time were more likely to drive impaired. This finding is contrary to the hypothesis. Nevertheless, the association between employment status and impaired driving must be interpreted with caution because of the relatively large number of respondents employed full-time.

Three questions were employed to assess the respondent's degree of alienation: (1) how often he/she gets together with neighbours, (2) with friends, and (3) if anybody in the community knows him/her well. The hypothesis was that those who are socially isolated from their environment would frequently engage in impaired driving, because since research has consistently demonstrated that alcohol abuse results from social isolation.

As shown in Table 3, analysis of the data through cross-tabulation found significant association ($x = 11$, $df = 4$, $p<.05$) between frequency of getting together with neighbours and impaired driving. The percentage of people engaged in impaired driving tends to increase as the number of times a respondent gets together with neighbours decreases. Also noteworthy is the significant association between getting together with friends and frequency of impaired driving ($x = 10$, $df = 4$, $p<.05$). Thus, the findings partially support the hypothesis that social alienation from the micro-community of friends and neighbours is a factor contributing to impaired driving.

Table 2: Impaired Driving by Economic Variables

Impaired Driving Frequency	Employment Status: Employed Full-time (N=195)	Employed Part-time (N=37)	Unemployed (N=27)	Retired (N=19)	In School (N=21)	Keeping House (N=27)
N-I-D	62 (122)	68 (25)	59 (16)	84 (16)	43 (9)	89 (24)
I-D	37 (73)	32 (12)	41 (11)	16 (3)	57 (12)	11 (3)

x^2=15, df=2, p<.01

	Occupation: White Collar (N=103)	Blue Collar (N=125)	Other (N=98)
N-I-D	75 (77)	66 (83)	52 (53)
I-D	25 (26)	34 (42)	47 (46)

x^2=10, df=2, p<.01

	Standard of Living Satisfaction: Very Dissatisfied (N=3)	2 (N=9)	3 (N=17)	4 (N=43)	5 (N=70)	6 (N=108)	Very Satisfied (N=75)
N-I-D	-	67 (6)	53 (9)	65 (28)	54 (38)	67 (74)	76 (57)
I-D	100 (3)	33 (3)	47 (8)	34 (15)	46 (32)	32 (34)	24 (18)

x^2=15, df=2, p<.05

Table 3: Impaired Driving by Alienation Variables

Impaired Driving Frequency	Get Together with Neighbours: Daily (N=34)	1-3 times a week (N=94)	1-3 times a month (N=81)	Less than 1/month (N=59)	Never (N=59)
N-I-D	77 (26)	73 (69)	55 (45)	67 (39)	54 (32)
I-D	24 (8)	27 (25)	44 (36)	30 (17)	46 (27)
	x^2=11, df=4, p<.05				

	Get Together with Friends: Daily (N=22)	1-3 times a week (N=158)	1-3 times a month (N=102)	Less than 1/month (N=42)	Never (N=2)
N-I-D	46 (10)	61 (96)	70 (71)	81 (34)	50 (1)
I-D	55 (12)	39 (62)	30 (31)	19 (8)	50 (1)
	x^2=10, df=4, p<.05				

	No One Knows Me Well: Never (N=50)	Rarely (N=121)	Sometimes (N=125)	Often (N=25)
N-I-D	58 (29)	61 (74)	70 (87)	72 (18)
I-D	42 (21)	39 (74)	30 (38)	28 (7)
	N.S. p>.05			

Lastly, the author explored the association between personal distress variables and frequency of impaired driving. Three domains of personal distress were employed: (1) degree of depression, (2) degree of boredom and, (3) loneliness. This measure has been used in previous research on drinking behaviour (see, for example, Antonovsky et al., 1987). As Table 4 illustrates, two personal distress variables—unhappiness and boredom—showed significant effects on the frequency of impaired driving ($p<.01$ vs. $p=.05$, respectively). Degree of loneliness was not found to be significant at the $p=.05$ level.

Regression Analysis

In order to determine which of the independent variables are most important in predicting frequency of impaired driving, multiple regression analysis were carried out. First, dummy measures were computed for some of the nominal independent variables (see Table 5). Second, the intercorrelations of the variables included in the multiple regression analysis were conducted to avoid the risk of high multicollinearity (not reported but available from the author).[5]

Table 6 presents the results of the multiple regression analysis which suggest that three independent variables (standard of living satisfaction, frequency of getting together with friends, and gender) are significant factors in predicting frequency of impaired driving.

Summary and Discussion

The purpose of this study was threefold: first, to examine the extent of impaired driving in an urban environment; second, to investigate the relationship between impaired driving behaviour and three domains of 'life distress'—economic, social, and personal, as well as three demographic varibales—age, sex, and marital status; and third, to determine which of the economic, social, personal and demographic variables are significant predictors of frequency of impaired driving.

The findings have provided evidence, arising from a chi-square analysis, that impaired driving is associated with life distress. Economic circumstances, alienation, and personal distress were all found to be statistically associated with impaired driving. Multiple regression analyses indicate that

Table 4: Impaired Driving by Personal Distress Variables

Impaired Driving Frequency	Never (N=87)	Seldom (N=141)	Sometimes (N=78)	Often (N=12)	Very Often (N=7)
	Depressed - Unhappy Past 3-4 Weeks				
N-I-D	77 (67)	57 (81)	68 (53)	75 (9)	29 (2)
I-D	23 (20)	43 (60)	32 (25)	25 (3)	71 (5)
	x^2=14, df=4, p<.01				
	Bored Past 3-4 Weeks				
	Never (N=80)	Seldom (N=94)	Sometimes (N=100)	Often (N=35)	Very Often (N=16)
N-I-D	75 (60)	66 (62)	62 (62)	63 (22)	38 (6)
I-D	25 (20)	34 (32)	38 (38)	37 (13)	62 (10)
	x^2=9, df=4, p<.05				
	Lonely - Remote Past 3-4 Weeks				
	Never (N=93)	Seldom (N=132)	Sometimes (N=71)	Often (N=21)	Very Often (N=8)
N-I-D	69 (63)	64 (85)	65 (46)	52 (11)	75 (6)
I-D	31 (29)	36 (47)	35 (25)	48 (10)	25 (2)
	N.S. p>.05				

Table 5: Measures of Variables, Means, and Standard Deviations
Variables Included in the Analysis

Variable	Mean	Standard Deviation
Dependent Variable		
Impaired driving monthly frequency	2.5	3.18
Independent Variable		
Demographic		
Age (measured in years)	29.45	8.65
Sex (1=male, 2=female)	1.31	.46
Level of education (measured in years)	13.47	3.06
Economic		
Employment status (1=employed, 2=others)	1.00	.00
Standard of living satisfaction	5.11	1.42
Occupation (1=white collar, 2=others)	1.74	.44
Social isolation		
Marital status (1=married or common law, 2=not married)	1.53	.50
Get together with neighbours	2.64	1.86
Get together with friends	2.39	.69
No one knows me well	2.24	.81
Personal distress		
Bored	2.59	1.14
Lonely	2.18	1.04
Depressed	2.16	.94

N=110

Table 6: Multiple Regression Analysis[1]

Variables	b	Multiple R	R^2	Sig F
Standard of living satisfaction	- .680	.330	.101	.003
Get together with friends	-1.106	.424	.179	.000
Gender	-1.518	.479	.229	.000
(constant)	10.614			

Note: Only impaired drivers where included in the analysis.

[1] Only significant predictors are included.

three variables (standard of living satisfaction, get togethers with friends, and gender) are significant predictors of impaired driving.

In adding the 'life distress' concept to the empirical understanding of the impaired driving phenomenon, this author does not intend to undermine the "group-influence" explanation which has been widely used in explicating and predicting DWI. Instead, the author believes that this additional concept and the findings presented in this research will make a welcome addition to the recently reawakened literature on impaired driving, particularly in the urban environment.

One of the policy implications of this research is that preventive intervention programs aimed at preventing impaired driving must go beyond the peer influence theory. Future research should consider different economic, alienation, and personal distress factors that affect frequency of impaired driving in urban areas than this study provides. Whether these factors are antecedent to impaired driving in rural areas or whether peer influence is more important in drunk driving behaviour in the rural than urban areas deserves more attention.

FOOTNOTES

[1] Based only on cases where driver condition was specified on the collision report form.

[2] The final sample included 51 percent males and 49 percent females. See Kinzel (1984) for additional selection procedure guidelines.

[3] Alberta Alcohol and Drug Abuse Commission contracted with the Population Research Laboratory to have 11 items on drunk driving included in the 1984 Edmonton Area Study.

[4] Both Education and Income were cross-tabulated with frequency of impaired driving and were found to have no significant association.

[5] No variable had intercorrelations above .468, so all variables were kept.

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